

## PATENT COOPERATION TREATY

PCT



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 23 FEB 2005

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Applicant's or agent's file reference G164PC230		<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/IB2004/001273		International filing date (day/month/year) 21.04.2004 ✓	Priority date (day/month/year) 02.05.2003 ✓	
International Patent Classification (IPC) or national classification and IPC B23K26/10, B23K26/38, B23K26/42, B42D15/10, B26D7/18, B65H29/02, B23K26/08, B23Q11/00				
Applicant KBA-GIORI S.A. et al. ✓				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet. ✓</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows: ✓</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 22.11.2004 ✓		Date of completion of this report 21.02.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Jeggy, T Telephone No. +49 89 2399-7341 		

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/001273

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-8 as originally filed

**Claims, Numbers**

1-15 received on 22.11.2004 with letter of 18.11.2004

**Drawings, Sheets**

1-4 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☐ claims Nos.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☒ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-15
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

III.1 The amendments filed with the letter dated 18.11.2004 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34 (2) (b) PCT. The amendments concerned are the definition of evacuation of the cut parts by aspiration through said cutting opening as defined in new filed claims 2 and 10, i.e. *'said evacuation means evacuate the cut parts by aspiration through said cutting openings'*. In fact, no such way of evacuation of the cut parts is disclosed in the originally filed application. On page 6 of the description (see lines 4-6 and 20-22 and also Figure 1), it is only precised that the cut parts are aspirated either in the box (9) through the air under depression or by an evacuation outlet also through air under depression. So it is clear that claim 2 and 10 should be written so that the evacuation means (9, 11) evacuate the cut parts through said aspiration box (9).

In this International Preliminary Report on Patentability (IPER), claims 2 and 10 are examined with such a new definition (see Items V.2 and V.3).

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**V.1 Cited Documents**

Reference is made to the following documents :

- D1: PATENT ABSTRACTS OF JAPAN vol. 1995, no. 11, 26 December 1995 (1995-12-26) & JP 07 197374 A (OFIC CO; others: 01), 1 August 1995 (1995-08-01)
- D2: EP-A-1 184 127 (LANGE CARL INGOLF) 6 March 2002 (2002-03-06)
- D3: US-A-5 348 285 (P. HUESER) 20 September 1994 (1994-09-20)
- D4: PATENT ABSTRACTS OF JAPAN vol. 1995, no. 11, 26 December 1995 (1995-12-26) & JP 07 214359 A (AMADA CO LTD), 15 August 1995 (1995-08-15)

**V.2 Claims 1-8**

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document) a machine for cutting an opening, from which the subject-matter of claim 1 differs in that the aspiration box is located on the same side of the substrate as said cutting tool and further comprises a bottom wall with aspiration openings against which said substrate is aspirated and a cutting opening through which said laser beam is directed onto the substrate.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

These distinguishing features allow a compacter design in association with an improved layout of the transport device as the entire system is located on the same side of the substrate, in particular with the use of the transfer system linked to the system. The problem to be solved by the present invention may be regarded as to provide an improved machine for cutting an opening in a substrate.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons :

- a- D1 discloses a machine for cutting an opening in a substrate in association with an aspiration system, but this aspiration system is not located on the same side as the laser cutting means. No indication could be found in D1 to locate this aspiration system on the same side as the laser cutting system, in particular by creating in this aspiration system a supplementary opening through which, in use, the laser beam is directed.
- b- D2 or D3 describe system for cutting opening (by laser or by punching) without precisising the use of aspiration means located on the same side as the laser cutting apparatus. D4 describes a laser beam machine with means for evacuating the cut parts, without any indication of using an aspiration box for fixing the substrate during the cutting operations.

Claims 2-8 (see Item III.1 for claim 2) are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step (Article 33 (2-3) PCT).

### V.3 Claims 9-15

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document) a process for cutting an opening, from which the subject-matter of claim 1 differs in that the process comprises further steps :

- a- directing a laser beam onto said substrate through a cutting opening provided in said surface to cut an opening in said substrate

The subject-matter of claim 9 is therefore new (Article 33(2) PCT).

This distinguishing step allows a compacter design in association with an improved layout of the transport device as the entire system is located on the same side of the substrate, in particular with the use of the transfer system linked to the system. The problem to be solved by the present invention may be regarded as to provide an improved process for cutting an opening in a substrate.

The solution to this problem proposed in claim 9 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the same reasons as those detailed for claim 1.

Claims 10-15 (see Item III.1 for claim 10) are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step (Article 33 (2-3) PCT).

**Claims**

1. Machine for cutting an opening, such as a window in a planar substrate (1), said machine having at least a cutting tool (12, 13), a transfer system (7, 8) holding said substrate (1) and driving said substrate along a determined direction, and an aspiration box (9) to maintain the substrate (1) during the cutting operation, said cutting tool comprising a laser (12) generating a laser beam (13) that can be moved in two perpendicular directions and evacuation means (9, 11; 15) to evacuate a cut part of said substrate (1), wherein said aspiration box (9) is located on the same side of the substrate as said cutting tool (12, 13) and further comprises a bottom wall (17) with aspiration openings (10) against which said substrate (1) is aspirated and a cutting opening (14) through which said laser beam (13) is directed onto the substrate.
2. Machine according to claim 1, wherein said evacuation means (9, 11) evacuate the cut part by aspiration through said cutting opening (14).
3. Machine according to claim 1, wherein said evacuation means comprise an evacuation outlet (15) for evacuating the cut part by aspiration which is disposed on the other side of the substrate with respect to the surface (17) against which the substrate (1) is applied during the cutting operation.
4. Machine according to claim 3, wherein said cutting opening (14) is closed by a transparent material, such as glass.
5. Machine according to any of the preceding claims, wherein said transfer system is a chain gripper system (7) comprising a chain on which gripper bars (8) are mounted.
6. Machine according to any of the preceding claims, wherein said laser (12) is displaced linearly or rotationally.



7. Machine according to any of claims 1 to 5, wherein said laser beam (13) is displaced linearly or rotationally.
8. Machine according to any one of the preceding claims, further comprising a laminate application unit for applying a strip of laminate over the cut opening of the substrate.
9. Process for cutting an opening, such as a window, in a planar substrate (1), said process being characterized by the following steps:
  - holding said substrate (1) with a gripper,
  - moving said substrate (1) along a given direction,
  - applying said substrate (1) against a surface (17) by using air under depression,
  - directing a laser beam (13) onto said substrate (1) through a cutting opening (14) provided in said surface (17) to cut an opening in said substrate,
  - evacuating the cut part of said substrate (1).
10. Process according to claim 9, wherein said cut part is evacuated by aspiration through said cutting opening (14).
11. Process according to claim 9, wherein said cut part is evacuated by aspiration through an evacuation outlet (15) disposed on the other side of the substrate (1) with respect to the surface (17) against which the substrate (1) is applied during the cutting operation.
12. Process according to any of claims 9 to 11, wherein said laser (12) is displaced linearly or rotationally.
13. Process according to any of claims 9 to 11, wherein said laser beam (13) is displaced linearly or rotationally.
14. Process according to claim 13, wherein a mirror displaces said laser beam.
15. Process according to any of claims 9 to 14, further comprising the step of applying laminate over the cut opening of the substrate.